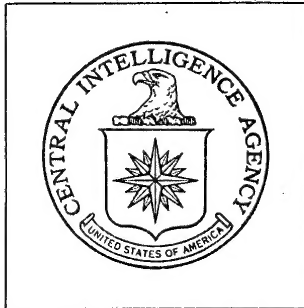


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DIRECTORATE OF
INTELLIGENCE

**Industrial Facilities
(Non-Military)**

Basic Imagery Interpretation Report

Fergana Petroleum Refinery

Fergana, USSR



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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
Imagery Analysis Service

INSTALLATION OR ACTIVITY NAME		COUNTRY
Fergana Petroleum Refinery		UR
UTM COORDINATES	GEOGRAPHIC COORDINATES	25X1
42TYK815390	40-26-50N 071-47-54E	
MAP REFERENCE		
2nd RTS. USATC, Series 200, Sheet M0328-23HL, 4th ed, Apr 68, Scale 1:200,000		
(SECRET)		25X1
LATEST IMAGERY USED	NEGATION DATE (If required)	
	NA	

ABSTRACT

The Fergana Petroleum Refinery is a medium-size Soviet refinery. It is the largest of the two refineries in the Fergana area.

The major production facilities of the refinery include crude oil distillation units, a delayed coking unit, lubricating oil production units, blending and treating units, a probable catalytic reforming-hydrotreating unit, a possible hydrotreating unit, and several unidentified secondary processing units.

The main products are lubricating oils and gasolines. Other products include kerosene, diesel and fuel oils, waxes, asphaltic materials, and coke.

In August 1957, when the area was first covered on photography, the refinery was in an early stage of construction. On coverage of December 1960, the vacuum distillation unit and several secondary processing units were complete and the refinery was in operation. By late 1965, both crude oil distillation units and most of the secondary processing units were complete. When the refinery was last seen in May 1970, all processing units were complete and there was no evidence of additional construction.

The refinery was in operation on all coverage from December 1960 through May 1970.

This report includes a detailed line drawing, a photograph of the refinery, a listing of equipment and facilities with measurements of storage tanks, and a discussion of the status of facilities.

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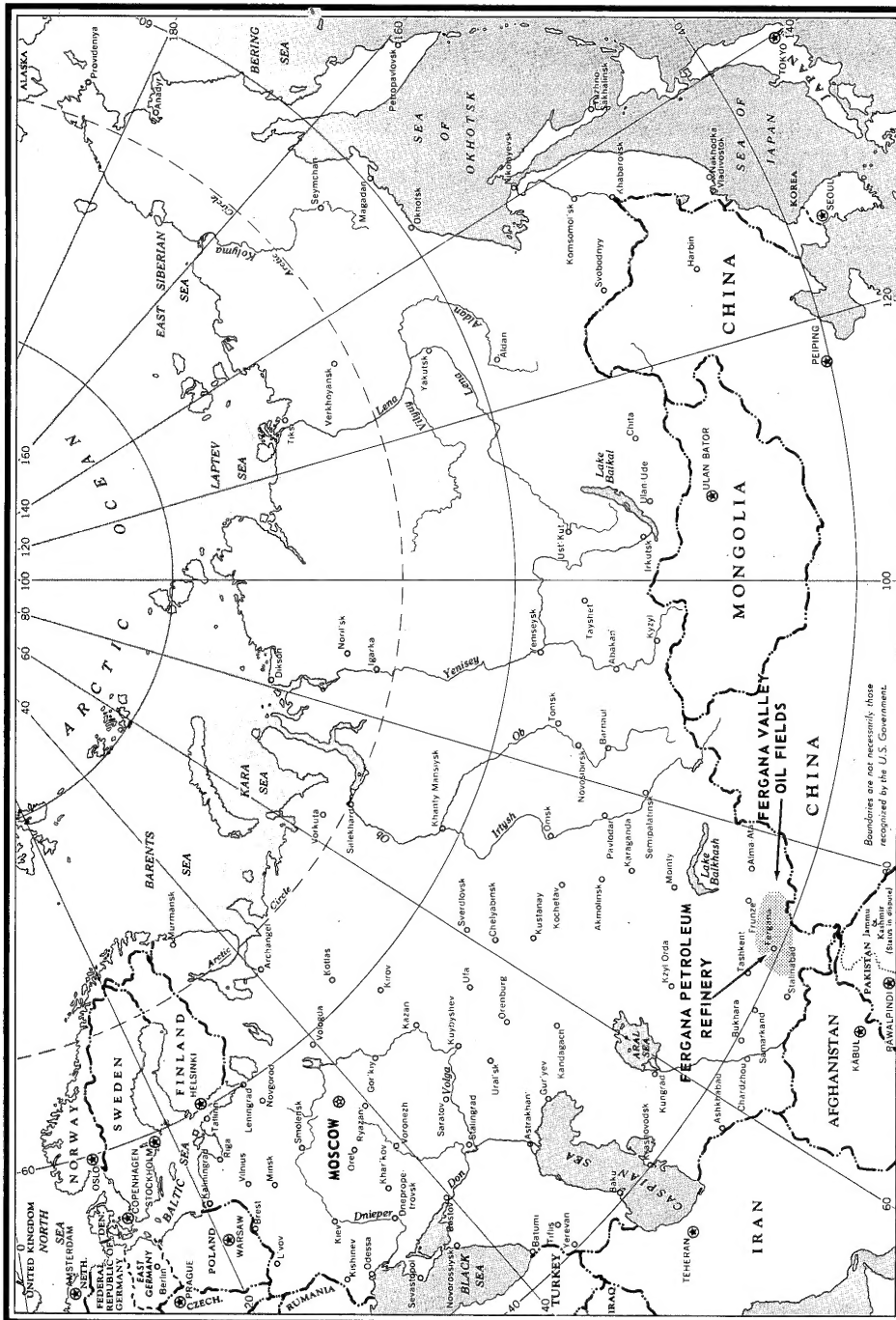


FIGURE 1. LOCATION MAP.

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INTRODUCTION

The Fergana Petroleum Refinery is located 3 nautical miles (nm) north of the city of Fergana (see Figure 1). It is 13 nm east of the Khamzy Khakimgrade Petroleum Refinery [redacted] the Fergana Refinery reportedly began operating in early 1959. 1/

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Rail service into the refinery is provided by a spur from the main line between Leninabad and Andizhan. Crude oil to charge the refinery comes from oil fields in the nearby Fergana Valley and in Uzbekistan and Kirgizia. 1/

Electric power and steam for the refinery are produced at the collocated Fergana Heat and Power Plant TETS 2 Refinery [redacted] The adjacent Fergana Nitrogenous Fertilizer Plant [redacted] is connected by pipelines to the refinery.

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BASIC DESCRIPTION

Physical Features

The refinery measures approximately 5,000 by 8,000 feet and occupies about 925 acres (see Figures 2 and 3). It is secured by a wall.

Operational Functions

This is a medium-size Soviet refinery with respect to charge capacity. The major refining units presently in operation include crude oil distillation units, a delayed coking unit, lubricating oil production units, blending and treating units, a probable catalytic reforming-hydrotreating (CR-HT) unit, a possible hydrotreating unit, and several unidentified secondary processing units.

Based on the identification of processing units, the main products of the refinery are lubricating oils and gasolines. Other products include kerosene, diesel and fuel oils, waxes, asphaltic materials, and coke.

Construction and Operational Status

The earliest photography used in this study is from August 1957. At that time, the vacuum distillation unit (Area U), the blending and treating unit (Area R), one deasphalting unit (Area S), the two solvent extraction units (Area O), one dewaxing unit (Area B), and the probable solvent recovery unit (Area H) were in the early stages of construction. The heat and thermal power plant and the substation were complete. Most of the support facilities and a few of the storage tanks were in place.

On photography of December 1960, the vacuum distillation unit, the blending and treating unit, the deasphalting unit, the two solvent extraction units, the dewaxing unit, the probable solvent recovery unit, and the clay treatment unit (Area N) were complete, and many storage tanks had been constructed. The refinery was observed in operation.

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By June 1962, one crude oil distillation unit (Area Q), the second deasphalting unit in Area S, and the probable blending/treating unit (Area Z) were complete. In Area C, one dewaxing unit was in the midstage and another was in the early stages of construction. The probable CR-HT unit (Area F), the delayed coking unit (Area Y), and one unidentified secondary processing unit in Area E and two in Area K were in the early stages of construction.

In September 1963, three unidentified secondary processing units in Area K were complete. In Area C, one of the dewaxing units was complete and the second was in the late stages of construction. The delayed coking unit was nearly complete. Both unidentified secondary processing units in Area E were in the midstage of construction. The second dewaxing unit in Area B and the possible hydrotreating unit (Area J) were in the early stages of construction. Site preparation was observed for the second crude oil distillation unit in Area Q and the unidentified secondary processing unit in Area L.

On November 1964 photography, the second dewaxing unit in Area B, the probable CR-HT unit, the delayed coking unit, and the unidentified secondary processing unit in Area T were complete. In Area C, the second dewaxing unit was complete and site preparation for a third was observed. The two unidentified units in Area E were nearing completion. The second crude oil distillation unit (Area Q) and the unidentified unit in Area L were in the midstage of construction. The possible hydrotreating unit was still in the early stages of construction.

By October 1965, the second crude oil distillation unit and the two unidentified units in Area E were complete. The third dewaxing unit in Area C was in the late stages and the possible hydrotreating unit was in the midstage of construction. Little progress had been made on the unidentified unit in Area L. Site preparation for the unidentified secondary processing unit in Area P was observed.

Photography of August 1967 revealed that the third dewaxing unit in Area C, the possible hydrotreating unit, and the unidentified unit in Area L were complete. The dewaxing unit in Area I was in the midstage of construction. The fourth unidentified secondary processing unit in Area K and the unidentified unit in Area P were in the early stages of construction. Site preparation was observed for the unidentified secondary processing unit in Area D.

In September 1968, the unidentified units in Areas P and K and the dewaxing unit in Area I were complete. The unidentified unit in Area D was in the midstage of construction.

August 1969 photography revealed that the unidentified unit in Area D was complete. When the refinery was last seen in May 1970 all processing units were complete and there was no evidence of additional construction.

The refinery was observed in operation on all coverage from December 1960 through May 1970.

Facilities and Equipment

Table 1 lists the functional areas and equipment within the refinery. All measurements are rounded to the nearest half-meter.

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Table 1. Equipment and Facilities at the Fergana Petroleum Refinery
(Keyed to Figure 3)

<u>Area</u>	<u>Functional Description</u>	<u>Equipment and Facilities</u>
A	Storage and Shipping	<p>37 Miscellaneous buildings</p> <p>5 Loading racks</p> <p>116 Cylindrical storage tanks</p> <p>17 [redacted] 25X1</p> <p>14 [redacted]</p> <p>16 12-meter-diameter</p> <p>36 9-meter-diameter</p> <p>10 [redacted] 25X1</p> <p>20 6-meter-diameter</p> <p>3 [redacted] 25X1</p> <p>42 Horizontal storage tanks</p> <p>4 24-meter-long</p> <p>4 [redacted] 25X1</p> <p>8 [redacted]</p> <p>10 [redacted]</p> <p>4 9-meter-long</p> <p>4 [redacted] 25X1</p> <p>8 (not measured because they are under roof)</p> <p>4 Semiburied storage tanks, 18 meters in diameter</p> <p>1 Gasholder, [redacted] 25X1 in diameter</p> <p>2 Water basins</p> <p>2 Flare towers</p>
B	Dewaxing	<p>1 Unit with</p> <p>1 solvent regeneration section</p> <p>6 settling/intermediate storage tanks</p> <p>1 chiller building with 9 crystallizer drums and an attached bank of processing equipment</p> <p>1 filter building with 4 hoppers and an overhead crane</p> <p>1 support building</p> <p>1 horizontal storage tank, 15 meters long</p> <p>1 gasholder, 9 meters in diameter</p>

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<u>Area</u>	<u>Functional Description</u>	<u>Equipment and Facilities</u>
B (Cont)		1 Unit with 1 solvent regeneration section 4 settling/intermediate storage tanks 2 banks of heat exchangers/cooling coils/accumulators 1 chiller building with an attached bank of processing equipment 1 filter building with 2 hoppers and an overhead crane 1 support building 1 gasholder, 9 meters in diameter 4 Storage tanks, 12 meters in diameter
C	Dewaxing	2 Units, each with 2 solvent regeneration sections 4 settling/intermediate storage tanks 2 banks of heat exchangers/cooling coils/accumulators 2 chiller buildings, each with 11 crystallizer drums 1 filter building with 8 hoppers and 2 overhead cranes 2 pump/processing buildings (one with a cluster of processing equipment) 1 support building (one unit has 2) 6 horizontal storage tanks, 25X1 long 1 gasholder, 9 meters in diameter 1 Unit with 2 solvent regeneration sections 2 banks of heat exchangers/cooling coils/accumulators 2 chiller buildings, each with 11 crystallizer drums 1 filter building with 8 hoppers and 2 overhead cranes 1 pump/processing building 1 support building 4 horizontal storage tanks, 25X1 long

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<u>Area</u>	<u>Functional Description</u>	<u>Equipment and Facilities</u>
C (Cont)		1 gasholder, 9 meters in diameter 9 Support buildings 23 Cylindrical storage tanks 5 12-meter-diameter 18 9-meter-diameter
D	Unidentified Secondary Processing	1 Unit with 3 columns 2 clusters of process- ing equipment 2 banks of heat exchangers/cooling coils/accumulators 2 processing buildings 8 Horizontal storage tanks 6 25X1 2 (not measured because they are under roof)
E	Unidentified Secondary Processing	1 Unit with 2 columns 3 cylindrical settling/ storage tanks 1 pipe furnace 4 processing buildings 1 support building 12 cylindrical storage tanks, 6 meters in diameter 4 horizontal storage tanks 3 12-meter-long 1 (not measured because it is under roof) 1 Unit with 3 columns 2 banks of heat exchangers/cooling coils/accumulators 1 processing building 6 cylindrical storage tanks, 6 meters in diameter 2 Support buildings 18 Cylindrical storage tanks 6 12-meter-diameter 6 25X1 6 12 Tank bases
F	Probable Catalytic Reforming- Hydrotreating	1 Unit with 1 Probable catalytic reforming section with 4 reactors 3 columns 1 cluster of process- ing equipment

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<u>Area</u>	<u>Functional Description</u>	<u>Equipment and Facilities</u>
F (Cont)		2 banks of heat exchangers/cooling coils/accumulators 1 furnace 1 possible preheater/precipitator 1 pump building 1 Probable hydrotreating section with 4 columns 1 cluster of processing equipment 2 furnaces 1 possible preheater/precipitator 1 pump building 2 horizontal storage tanks, 6 meters long 1 Pump building common to both sections 4 Support buildings 12 Cylindrical storage tanks 8 25X1 4 25X1 1 Water basin
G	Shipping	2 Loading racks 2 Shipping buildings 3 Support buildings 6 Cylindrical storage tanks, 3 meters in diameter
H	Probable Solvent Recovery	1 Unit with 2 columns 1 bank of heat exchangers/cooling coils/accumulators 1 pipe furnace 1 pump building 2 cylindrical storage tanks, 25X1 in diameter 4 horizontal storage tanks, 6 meters long 1 Support building 8 Cylindrical storage tanks, 9 meters in diameter
I	Dewaxing	1 Unit with 1 solvent regeneration section 1 chiller building with 11 crystallizer drums 1 filter building with 4 hoppers and an overhead crane 2 pump/processing buildings (one with a bank of heat exchangers/cooling coils/accumulators on the roof)

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Area	Functional Description	Equipment and Facilities
I (Cont)		1 support building 1 gasholder, 9 meters in diameter 1 Support building 6 Cylindrical storage tanks 2 9-meter-diameter 4 25X1
J	Possible Hydrotreating	1 Unit with 3 possible reactors 9 columns 1 cluster of process- ing equipment 2 banks of heat exchangers/cooling coils/accumulators 3 pipe furnaces 1 pump/compressor building 3 Support buildings 16 Cylindrical storage tanks 2 12-meter-diameter 4 25X1 4 6 6-meter-diameter
K	Unidentified Secondary Processing	1 Unit with 4 columns 1 cluster of processing equipment 1 bank of heat exchangers/ cooling coils/ accumulators 2 processing buildings 3 pipe furnaces 1 pump building 2 cylindrical treating/storage tanks 2 horizontal treating/storage tanks 1 Unit with 6 columns 8 short processing columns/tanks 1 pump building 2 cylindrical storage tanks, 25X1 25X1 1 gasholder, 25X1 25X1

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<u>Area</u>	<u>Functional Description</u>	<u>Equipment and Facilities</u>
K (Cont)		1 Unit with 2 columns 2 short processing/ storage tanks 1 bank of heat exchang- ers/cooling coils/ accumulators 1 processing building 1 Unit with 3 processing buildings 3 support buildings 1 gasholder, 6 meters in diameter 6 Cylindrical storage tanks 2 25X1 4 9-meter-diameter
L	Unidentified Secondary Processing	1 Unit with 7 columns 2 clusters of processing equipment 2 pump buildings 4 pipe furnaces 2 cylindrical treating/ storage tanks 2 horizontal treating/ storage tanks 12 Cylindrical storage tanks, 12 meters in diameter
M	Water Cooling	2 Cooling towers 3 Support buildings 6 Cylindrical storage tanks 1 25X1 5 9-meter-diameter 11 Water basins
N	Clay Treatment	1 Unit with 4 columns 10 cylindrical treating tanks 2 pipe furnaces 1 processing building attached to a clay receiving section by a conveyor 1 support building 4 cylindrical storage tanks 2 25X1 2 3-meter-diameter 8 Cylindrical storage tanks 4 12-meter-diameter 4 25X1

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Area	Functional Description	Equipment and Facilities
O	Solvent Extraction	2 Units, each with 7 columns 2 banks of heat exchangers/cooling coils/accumulators 2 pipe furnaces 1 pump building 2 support buildings 3 cylindrical storage tanks, 25X1 in diameter 4 horizontal storage tanks, 25X1 long 4 Support buildings
P	Unidentified Secondary Processing	1 Unit with 8 columns 6 cylindrical processing tanks 1 cluster of processing equipment 1 pipe furnace 2 processing buildings, each with a bank of heat exchangers/cooling coils/accumulators on the roof 3 support buildings 1 gasholder, 6 meters in diameter 4 Support buildings 21 Cylindrical storage tanks 11 12-meter-diameter 25X1 4 6-meter-diameter 25X1 2 6-meter-diameter 25X1
Q	Crude Oil Distillation	2 Units, each with 1 atmospheric column 1 vacuum column 7 other columns (3 of which are probably recycle columns) 1 cluster of processing equipment 2 banks of heat exchangers/cooling coils/accumulators 3 processing buildings (one with 6 horizontal and 9 cylindrical treating tanks) 2 pipe furnaces 2 pump buildings 3 support buildings 2 Desalting units, each with 3 desalting spheres 1 processing building 2 cylindrical treating tanks 1 horizontal treating tank (one unit has 2)

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Area	Functional Description	Equipment and Facilities
Q (Cont)		1 Support building 15 Cylindrical storage tanks 6 12-meter-diameter 9 6-meter-diameter
R	Blending, Treating, and Shipping	1 Blending and treating unit with 1 building with 11 batch agitators/mixers 6 processing buildings (one with 8 cylindrical treating/blending tanks) 2 pipe furnaces 1 probable packaging building 1 support building 3 cylindrical storage tanks, 6 meters in diameter
S	Deasphalting	1 Unit with 6 columns 1 cluster of processing equipment 1 bank of heat exchangers/cooling coils/accumulators 1 pipe furnace 1 pump building 4 cylindrical storage tanks, 3 meters in diameter 1 Unit with 6 columns 1 cluster of processing equipment 1 bank of heat exchangers/cooling coils/accumulators 1 pipe furnace 1 pump building 6 cylindrical storage tanks, 3 meters in diameter 3 horizontal storage tanks, 6 meters long
T	Unidentified Secondary Processing	1 Unit with 4 columns 5 short probable processing columns 2 processing buildings (one with a bank of heat exchangers/cooling coils/accumulators on the roof) 4 horizontal processing tanks 2 support buildings 2 cylindrical storage tanks,

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Area	Functional Description	Equipment and Facilities
U	Vacuum Distillation	1 Unit with 1 vacuum column 7 other columns (3 of which are probably recycle columns) 3 banks of heat exchangers/cooling coils/accumulators 2 small processing buildings 1 pipe furnace 1 pump building 1 support building 4 cylindrical storage tanks, 3 meters in diameter 4 horizontal storage tanks 1 12-meter-long 1 25X1 2
V	Storage	1 Pump building 2 Support buildings 14 Cylindrical storage tanks 7 25X1 7 18-meter-diameter 1 Water basin
W	Storage and Water Cooling (1) Water Cooling	1 Pump building 8 Miscellaneous buildings (2 of which are under construction) 11 Cooling towers 1 Gas holder, 25X1 in diameter 3 Water basins
	(2) Storage	2 Buildings 2 Semiburied storage tanks (not measured)
X	Blending/Treating and Storage	1 Unit with 2 columns 9 horizontal blending/treating tanks 2 processing buildings 2 Support buildings 17 Cylindrical storage tanks 2 12-meter-diameter 2 25X1 7 9-meter-diameter 4 25X1 2 6-meter-diameter

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<u>Area</u>	<u>Functional Description</u>	<u>Equipment and Facilities</u>
Y	Delayed Coking	<ul style="list-style-type: none">1 Unit with<ul style="list-style-type: none">2 columns (one for fractionation and one for vapor recovery)3 coking drums3 banks of heat exchangers/cooling coils/accumulators (one of which is on the roof of a processing building)1 pipe furnace1 pump building1 compressor building1 shipping building connected to coking drums by conveyor2 support buildings1 crane3 cylindrical storage tanks, 25X1 in diameter2 horizontal storage tanks, 6 meters long2 Support buildings6 Cylindrical storage tanks<ul style="list-style-type: none">2 12-meter-diameter2 25X12 6-meter-diameter
Z	Probable Blending/Treating	<ul style="list-style-type: none">1 Unit with<ul style="list-style-type: none">1 processing building16 cylindrical blending/treating tanks10 horizontal blending/treating tanks

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REFERENCES

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Map

2nd RTS. US Air Target Chart, Series 200, Sheet M0328-23HL. 4th edition.
April 1968. Scale 1:200,000 (SECRET)

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1. US Department of Commerce. JPRS, 44605 Studies in Oil Refining and Petrochemistry, "Report on Oil Refinery Imeni the 40th Anniversary of Uzbekistan" Pages 56-58, March 1968 (UNCLASSIFIED)

Requirement

COMIREX NO2
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